Checklist for preparing Dam Registration and Dam Safety Permit Renewal Application

(For questions regarding this checklist or other information, please call Tammy Theilen (573) 368-2175.)

A. SIGNED AND SEALED CERTIFICATION BY AN ENGINEER REGISTERED IN MISSOURI THAT:

1. Dam and reservoir have been inspected in accordance with the law.

2. Owner has complied with the engineer's recommendations to correct observed defects.

B. REPORT ON INSPECTION INCLUDING:

1. Determination of a downstream environmental class for each dam and reservoir. The zone of potential inundation below the dam must be checked for the presence of occupied structures. See 10 CSR 22-2.040 for guidance on determining downstream environmental zones. Any changes to the environmental classification already assigned to the dam should be discussed immediately with the Dam Safety staff to see what, if any, additional work will be required to justify the change.

2. Description of dam and appurtenant structures

    a. Description of embankment.
    b. Description and location of principal and emergency spillways.
    c. Description and location of water withdrawal works.
    d. Description and location of discharge channels.
    e. Description and location of internal drain outlets.
    f. Description and location of all other structures not included above.

3. Evaluation of hydrological and hydraulic capacity. The dam must be shown to be capable of passing the design storm inflow as shown in Table 5, CSR 22-3.020(7) without overtopping. One of the following conditions must be satisfied:

    a. The dam must be shown to have essentially the same watershed characteristics and the same reservoir storage and/or spillway capacity as existed at the time of the previous renewal inspection. The following data

must be submitted in support:

- A profile of the crest of the dam
- Spillway(s) crest elevation

OR

b. Sufficient surveying and analysis must be performed to show the current dam and spillway configuration meets the requirements. The application report should include:

- Drainage area (square miles or acres) shown on an up-to-date USGS topo map.
- SCS Curve Number for watershed draining into lake.
- Time of concentration for runoff draining into reservoir. Sufficient documentation should be provided to derive the value used.
- Storage (acre-feet) vs. elevation (feet) data for reservoir. This information should be provided for elevations ranging from the bottom of the reservoir to the top of the dam. The surface area of the lake (acres) at normal pool (the elevation of the primary spillway) and at the minimum elevation of the top of the dam should also be submitted in support of this information.
- Minimum elevation of top of dam exclusive of the spillway(s). If the top of dam is not level, a profile of the top of dam is required.
- The normal pool elevation of the reservoir (elevation of the inlet to the primary spillway).
- Height of dam (measured in accordance with 10 CSR 22-1.020 (13)).
- Length of dam.
- Discharge (cubic feet per second) vs. elevation (feet) data for spillway(s) with backup computations to show how the data was computed.
- The required critical design in-flow hydrograph to the reservoir as determined by taking the appropriate percentage of the PMP as shown in Table 5, 10 CSR 22-3.020.
- The probable maximum precipitation values from Hydrometeorological Report No. 51, the duration of the rainfall, and the rainfall distribution pattern used to compute the hydrograph must also be submitted. Sufficient information should be submitted to derive the hydrograph.
- The required design storm out-flow hydrograph derived by reservoir routing the required design storm in-flow hydrograph through the spillway.
- The possibility of submergence of the spillway control(s) by backwater conditions in the spillway discharge channel must be addressed.
- The ability of the spillway and discharge channel to withstand the exit velocity expected through them during the required design storm must be addressed.
- The alignment of the spillway discharge channel with respect to the dam and what effect, if any, erosion or overtopping of the discharge channel will have on the dam.

4. Condition of embankment

a. Observation of slope stability

- Description and location of slides.
- Description and location of zones of softness.
- Description and location of zones of settlement.
- Description and location of erosion features.
- Description and location of cracks in the embankment.

b. Observation of seepage

- Description and location of zones of seepage with estimated flow rate.

c. Monitoring

- Evaluation of piezometer readings since previous renewal (if any).
- Evaluation of seepage measuring devices (if any).
- Evaluation of horizontal or vertical displacement monuments or inclinometers.

d. Judgement of slope stability- The engineer should state that in his judgement the dam is performing adequately and there are no observable indications that the dam is unsafe.

C. REPORT ON THE CORRECTION OF DEFECTS

Describe any defects evident at the time of the initial inspection and the actions taken to correct them

**********IMPORTANT**********

A CONSTRUCTION PERMIT MUST BE OBTAINED FOR CORRECTION OF MAJOR DEFECTS- CONSULT THE DEPARTMENT OF NATURAL RESOURCES WATER RESOURCES PROGRAM FOR INFORMATION ON WHETHER A PERMIT IS REQUIRED AND FOR CONSTRUCTION PERMIT REQUIREMENTS

D. REPORT ON MAINTENANCE AND INSPECTION REQUIREMENTS

Describe recommended maintenance and inspection requirements for the dam.

- Seepage monitoring.
- Monitoring of reservoir level and spillway operation during storm runoff.
- Monitoring of instruments used to observe the stability of the dam.
- Erosion control.
- Vegetation control.
- Spillway maintenance.

E. RECOMMENDATION ON RENEWING PERMIT

Should the permit be renewed?
Recommended length of permit
Class 1 and 2 dams – 3 year maximum term
Class 3 dams – 5 year maximum term